

TWO NEW SPECIES OF *APHIS* L. (HEMIPTERA: APHIDIDAE) FROM
ARGENTINA LIVING ON ASTERACEAE

M. PILAR MIER DURANTE AND JAIME ORTEGO

(MPMD) Departamento de Biología Animal, Universidad de León, E-24071 León, Spain (e-mail: dbajnn@unileon.es); (JO) AER Malargüe, Instituto Nacional de Tecnología Agropecuaria, Saturnino Torres 862, 5613 Malargüe (Mza), Argentina

Abstract.—Two new Argentinean aphid species are described: *Aphis (Aphis) coridifoliae*, living on *Baccharis coridifolia* from Cordoba Province, and *Aphis (Aphis) melosae*, living on *Grindelia chiloensis* from Mendoza Province. The apterous and alate viviparous females of both species are described, and two forms of *A. (A.) melosae* apterae are distinguished: “big” and “dwarf.” The differences between the new species and other closely related species are given.

Resumen.—“Dos nuevas especies de *Aphis* (Hemiptera: Aphididae) propias de Asteraceae de Argentina”. Se describen las hembras vivíparas ápteras y aladas de dos nuevas especies de pulgones de Argentina: *Aphis (A.) coridifoliae*, de la provincia de Córdoba, sobre *Baccharis coridifolia*, y *Aphis (A.) melosae*, de la provincia de Mendoza, sobre *Grindelia chiloensis*. Se distinguen dos tipos de vivíparas ápteras de *A. (A.) melosae*: las grandes y las enanas. Se discuten las diferencias entre las nuevas especies y otras próximas.

Key Words: aphid, new species, pulgón, especie nueva

The genus *Aphis* Linnaeus, 1758 and its nominotypical subgenus are the largest genus and subgenus of Aphididae (Remaudière and Remaudière 1997), and they are mostly distributed in the northern territories.

There are few *Aphis* s. st. species recorded in the southern territories of the World: 8 in Australia (Eastop 1966), 16 in Sub-Saharan Africa (Millar 1994), approximately 29 in India (Ghosh 1975, 1977, Raychaudhuri, Ghosh and Basu 1980) although Numann-Etienne and Remaudière (1995) recorded seven species in Pakistan, which are not known in India.

In South America 25 species of the sub-

genus *Aphis* are known (and two species of the subgenus *Protaphis* Börner, 1952) (Ortego and Mier Durante 1997). This number may increase, because of the presence of large areas with favorable climatic conditions for this subgenus, especially the southern part of South America. Moreover, a high proportion of recorded species there are endemic: 11/25 species (Remaudière 1994, Ortego and Mier Durante 1997).

Four *Aphis* s. st. species live on Asteraceae in South America: *Aphis coreopsisidis* (Thomas 1878) is also known in North America and Africa, *A. helianthi* (Monell 1879) is also known in North America, and two endemic species *A. senecionicooides*

Blanchard 1944 and *Aphis* sp. unpublished (Ortego 1998). Moreover the polyphagous and more or less cosmopolitan *A. craccivora* Koch, 1854, *A. fabae* Scopoli, 1763, and *A. spiraecola* Patch, 1914, can live on Asteraceae, and, in fact, they have been recorded on Asteraceae in South America.

Two new species of *Aphis* s. st. have been found in Argentina on the South American Asteraceae *Grindelia* and *Baccharis*, and these are described here.

Abbreviations used in the text and tables are as follows: abd.seg.I to VIII = abdominal segment I to VIII; ant.III, IV, V = antennal segments III, IV, V; ant.VIb and ant.VIpt = base and processus terminalis of antennal segment VI; BL = body length; D = basal diameter of ant.III; d = diameter of trochanter-femoral joint of hind legs; h.t.II = second segment of hind tarsus; u.r.s. = ultimate rostral segment. Values in parentheses () are exceptional values.

Aphis* (*A.*) *coridifoliae
Mier Durante and Ortego,
new species
 (Fig. 1)

Apterous viviparous female (n = 142; 16 measured) (Fig. 1A–I).—Body 1.00 to 1.70 mm. long, 7.38 to 10.00 (mostly 8 to 9) times siphunculus. Light or greenish yellow when alive, with white waxy powder, reticulated, with apex of antenna and legs, siphunculus and cauda dark brown to black and frequently with lateral dark brown spots on abdomen (intersegmental sclerites). Prepared specimens light in general with head, most of antenna and legs, rostrum and sometimes postsiphuncular, and dorso-abdominal VII and VIII sclerites (paler), smoky, and apex of ant.V, antennal segment VI, apex of tibiae, tarsi, sometimes apex of hind femur III, intersegmental sclerites, siphunculus, cauda and genital and anal plates dark brown to black.

Dorsal cuticle slightly and irregularly reticulated. Setae pale, short (Table 1), acute or dorsal ones slightly blunt. Large and low domelike marginal papillae on prothorax

(bigger) and abd.seg.I and VII (exceptionally absent on abd.seg.VII); 2 to 7 (frequently 4 to 6) marginal papillae similar in shape, but smaller, on abd.seg.II, III, IV and VI.

Frontal profile convex, slightly sinuate. Antenna 5 or 6 segmented (without correspondence with BL), (0.57) 0.62 to 0.90 mm, (0.42) 0.480 to 0.59 times BL; antennal segment lengths (in mm): ant.III+IV (5 segmented antenna) = 0.21 to 0.33; ant.III (6 segmented antenna) = 0.10 to 0.25; ant.IV (also 6 segmented) = 0.07 to 0.14; ant.V = 0.08 to 0.15; ant.VIb = 0.08 to 0.12; ant.VIpt = 0.10 to 0.14; ant.III 1.87 to 2.95 (5 segmented antenna) or 0.87 to 1.79 (6 segmented antenna) times longer than ant.VIpt, which is (0.91) 1.14 to 1.47 times longer than ant.VIb. Antennal setae few: 2 to 4 (6) and 1 to 3 respectively on ant.III and IV (6 segmented antenna) or on their correspondent parts (5 segmented antenna).

Rostrum (0.33 to 0.40 mm long) reaching hind coxae; BL. 3.03 to 4.56 times length of rostrum; u.r.s. 0.09 to 0.11 mm long, 2.0 to 2.5 (2.7) times as long as its basal width, 0.95 to 1.11 longer than h.t.II, (0.92) 1.00 to 1.25 times ant.VIb, with sides slightly concave and 2 accessory lateral setae.

Hind tibia (0.32) 0.37 to 0.44 times BL. First tarsal segment with 3.3.2. setae, as is normal in *Aphis* (Eastop 1966); h.t.II 0.09 to 0.11 mm long.

Conspicuous intersegmental sclerites; a narrow bar across dorsum of abd.seg.VIII in front of setae and sometimes small spinal on abd.seg.VII and sometimes postsiphuncular sclerites. Abd.seg.I to VI with 2 (rarely 3) marginal setae each side and 2 spinal ones; only two setae on abd.seg.VIII. Siphunculus more or less cylindrical, slowly enlarged on basal third, rough, 0.11 to 0.22 mm long, 2.80 to 4.00 times its width in middle, and 0.89 to 1.26 times cauda. Subgenital plate with 2 anterior and 4–10 posterior setae. Cauda fingerlike, 0.12 to 0.18

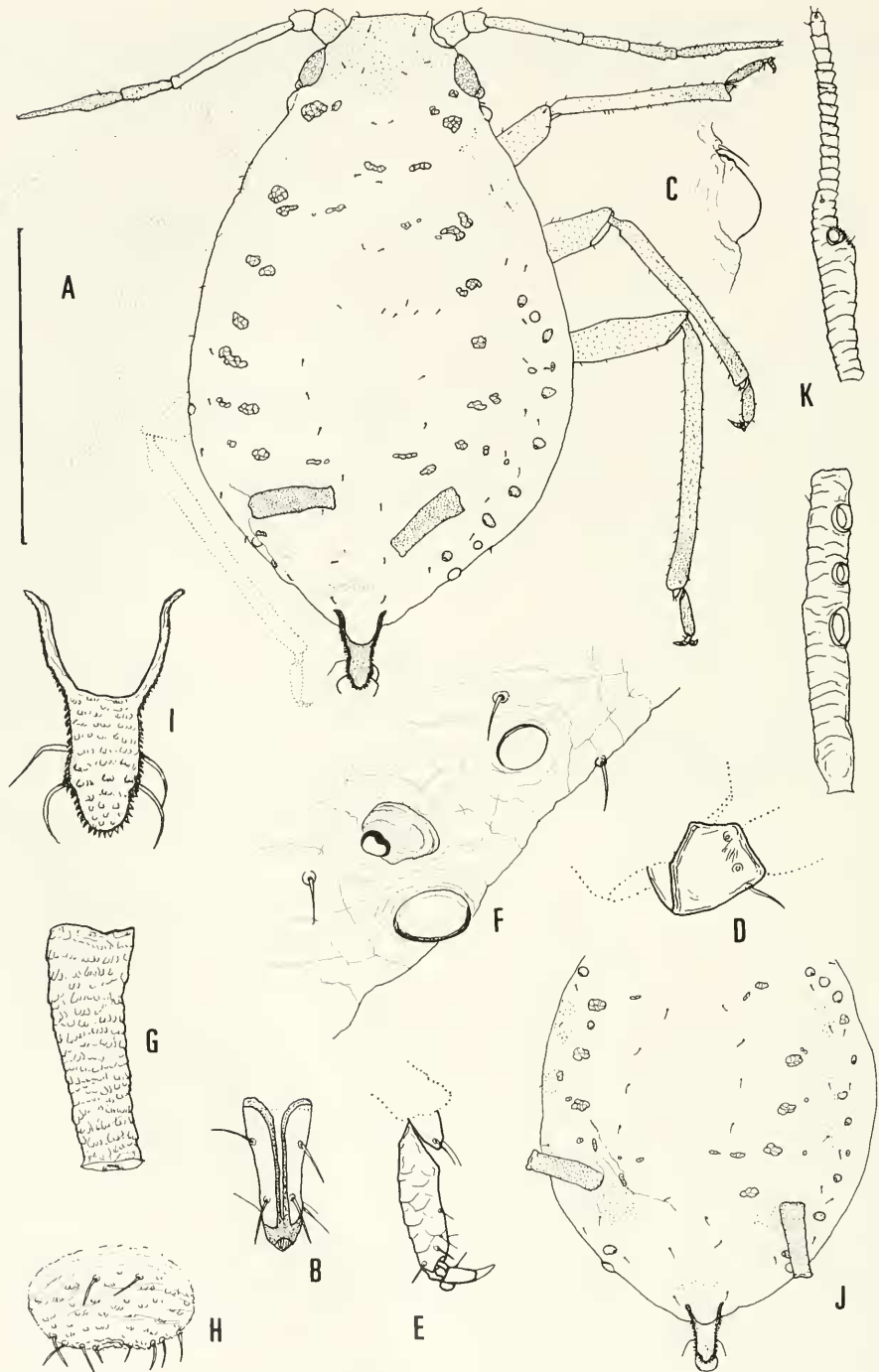


Fig. 1. *Aphis (A.) coridifoliae*. A-I, Apterous viviparous female. J-K, Alate viviparous female. A, Habitus. B, Ultimate rostral segment. C, Prothoracic marginal papillae. D, Hind trochanter. E, Hind tarsus. F, Marginal part of the abd. seg. VI and VII. G, Siphunculus. H, Subgenital plate. I, Cauda. J, Abdomen. K, Antennal segments III (above) and VI. Scale bar = 0.615 mm (A, J), 0.40 mm (H), 0.20 (B, D, E, G, I, K), 0.125 mm (C, F). Illustrations by María Nieto González.

Table 1. Setae measurements of *Aphis* (*A.*) *coridifoliae*, apterous viviparous [ap. viv.] and alatae viviparous [al. viv.] females.

		ap. viv.	al. viv.
ant.III	μm long	7-13	10-13
	D times	0.5-0.9	0.8-1.0
vertex	μm long	10-18	13
	D times	0.7-1.4	0.9-1.0
hind trochanter	μm long	22-30	20-25
	d times	0.5-0.8	0.6-0.8
hind femur: dorsal	μm long	10-18	10-13
	D times	0.7-1.4	0.8-1.0
abd.seg.III: spinal	μm long	15-20	12-18
	D times	0.9-1.6	1.0-1.4
abd.seg.III: marginal	μm long	10-20	12-18
	D times	0.7-1.4	1.0-1.4
abd.seg.VII: spinal	μm long	17-28	20-28
	D times	1.2-2.2	1.6-2.2
abd.seg.VIII	μm long	20-30	22-28
	D times	1.5-2.4	1.8-2.2

mm long, 1.19 to 1.52 times its basal width, with 4 to 6 setae.

Alate viviparous female (n = 8; 5 measured) (Fig. 1J, K).—Body 1.22 to 1.48 mm long. Alive and mounted similar to apterae, but darker on head, antenna (ant.I, $\frac{2}{3}$ distal ant.III, $\frac{1}{2}$ distal ant.V and VI dark; ant.II, other parts of ant.III and V and ant.IV smoky), thorax and legs (excepted basal $\frac{2}{3}$ of tibiae). Four to eight large and rounded secondary sensoria on ant.III. Marginal sclerites on abd.seg.II to IV present; other dorsal sclerites on abdomen also similar to those in apterae.

Other metric and meristic characters (setae included, Table 1) very similar to apterae, but with following differences: ant.III up to 0.235 mm length and 1.48 to 2.24 times ant.VIpt, siphunculus (narrower than apterae) 3.14 to 3.75 times its medial width, and cauda 1.05 to 1.55 its basal width.

Type material.—Holotype: apterous viviparous female (measured specimen number 16) collected on *Baccharis coridifolia* DC at Villa Dolores (Córdoba province, Argentina; 32°00'S, 65°10'W, 540 m), 1-XI-96, J. Ortego leg., in collection Universidad de León (Departamento de Biología Animal). Paratypes: 141 apterous and 8 alate

viviparous females found (J. Ortego leg.) on the same host-plant at the same locality, 3-IX-95 and 1-XI-96, deposited in the authors' collections (Universidad de León, and INTA-Malargüe) and in The Natural History Museum, London and Muséum National d'Histoire Naturelle, Paris.

Etymology.—The specific name is an adjective used as a substantive in the genitive case derived from the specific name of the aphid's hostplant: *coridifolia* (I.C.Z.N., article 11 (h) (i) (4), International Commission of Zoological Nomenclature 1985).

Biology and distribution.—*Aphis* (*A.*) *coridifoliae* is possibly monoecious and holocyclic on *Baccharis coridifolia* and perhaps on other related species of *Baccharis* (Asteraceae). It forms small and dense colonies on the stems of the host plant, which is distributed, from the center of Argentina to Bolivia, Paraguay and southern Brazil; these territories constitute the potential area of distribution of the new aphid species.

Discussion.—*Aphis* (*A.*) *baccharicola* Hille Ris Lambers, 1974 is the only other *Aphis* species specific on *Baccharis*; it lives on *Baccharis pilularis* DC. in California (U.S.A.). It belongs to the *Aphis helianthi* Monell group (Hille Ris Lambers 1974), and it is a very different species from *A.* (*A.*) *coridifoliae*. Apterous viviparous females of *A.* (*A.*) *baccharicola* have marginal sclerites, have not marginal papillae on abd.II to VI, and have longer setae (50-60 μm and 70 μm on abd.seg. III and VIII respectively, and setae on ant.seg.III twice as long as D) longer ant.VIpt, and longer siphunculus, which frequently have setae.

Aphis (*A.*) *coridifoliae* can be differentiated from the majority of species in the subgenus *Aphis* recorded in South America, by the short ant.VIpt (1.47 times ant.VIb at most) in both apterous and alate viviparous females.

The ant.VIpt is shorter than 1.5 times ant.VIb only in *A.* (*A.*) *danielae* Remaudière, 1994, *A.* (*A.*) *mulinicola* Hille Ris Lambers, 1974 and *A.* (*A.*) *senecionicoides*

Blanchard, 1944. In *A. (A.) danielae* apterous viviparous females, living on *Lycium* sp. (Solanaceae), the marginal papillae on abd.seg.II to VI are absent, the u.r.s. is relatively long (at least 0.11 mm) and the discal plate on the abdomen is frequently present. In *A. (A.) mulinicola* apterous viviparous females, living on *Mulinum* (Apiaceae), the discal plate on the abdomen is present and the cauda has 8–10 setae. In *A. (A.) senecionicooides* apterous viviparous females, living on *Senecio* (Asteraceae), the marginal papillae on abd.seg. II to VI are absent and the u.r.s. is longer (approximately 0.16 mm).

Sometimes, the apterous and alatae females of *Aphis (A.) schinifoliae* Blanchard, 1939 and the apterous females of *A. (A.) craccivora* Koch, 1854, have the ant.VIpt shorter than 1.5 times ant.VIb. *A. (A.) schinifoliae* apterae have light and outwardly curved siphunculi and lack marginal papillae on abd.seg.II to VI and *A. (A.) craccivora* apterae have a discal plate on the abdomen and 3 marginal papillae on abd.seg.II to VI at most. *Aphis schinifoliae* lives on *Schinus* spp. (Anacardiaceae) and *A. craccivora* is polyphagous.

Aphis (A.) melosae
Mier Durante and Ortego,
new species
(Fig. 2)

Apterous viviparous female (n = 301; 34 measured) (Fig. 2A–K).—Two forms are distinguished (1) “big” ones: BL = (1.45) 1.52 to 2.05 mm, dark brown to blackish brown; shining, with abdominal plate and mainly with secondary sensoria on ant.III, and (2) “dwarf” ones: BL = 0.97 to 1.45 mm, light brown to dark green, more or less opaque, with an incomplete or without abdominal plate and without secondary sensoria.

Mounted specimens “big” are dusky light in general, with head, ant.I, II, V (apex) and VI, rostrum, coxae, dorsal part of hind femur (sometimes also front and middle femora) and dorsal plates smoky to

light brown, apex of tibiae, tarsi, siphunculus (darkest), cauda and anal and genital plates dark brown to black; “dwarf” specimens with ant.II and V and femora, paler than “big” ones.

Dorsal cuticle more or less reticulated. Setae hard, acute and pale (measurements in Table 2). Marginal papillae present on prothorax and abd.seg.I and VII, elevated domelike to ovoidal in shape but different in size, prothoracic ones are largest and ones on abd.seg.VII are smallest and sometimes absent in “dwarf” specimens; (1) 3 to 6 (“big” specimens) or 0 to 2 (5) (“dwarf”) marginal papillae in all on abd.seg.II, III and IV.

Front moderately sinuate, with shallow laterofrontal sinuses. Antenna 6 (“big” and “dwarf”) or 5 (“dwarf”) segmented; 0.92 to 1.25 (“big”) or 0.55 to 0.90 (“dwarf”) mm long and 0.52 to 0.67 times BL, measurements of antennal segments on Table 3; antennal setae few: 5 to 8 (12) (“big”) or 2 to 8 (“dwarf”) on ant.seg.III (6 segmented antenna) or on its correspondent part (5 segmented antenna). “Big” specimens with 0 to 6 rounded secondary sensoria, placed on line on ant.III; sensoria per antenna (34 antennae examined)—0: 26% antennae, 1–3: 50% and 4–6: 24%.

In “big” specimens rostrum reaching hind coxae, it is 0.50 to 0.65 mm long and 0.28 to 0.41 times BL; and u.r.s. is 0.14 to 0.17 mm long, 2.07 to 3.33 times as long as its basal width and 1.11 to 1.32 longer than h.t.II. In “dwarf” specimens rostrum reaching up to abd.seg.V, it is 0.44 to 0.57 mm long and 0.34 to 0.47 times BL; and u.r.s. is 0.11 to 0.14 mm long, 2.25 to 3.00 times as long its basal width and 1.20 to 1.37 h.t.II. In both kinds, u.r.s. with sides slightly concave and 2 accessory lateral setae.

Hind tibia 0.43 to 0.58 times BL. First tarsal segment with 3.3.2 setae; h.t.II 0.09 (“dwarf”) or 0.11 (“big”) to 0.14 mm long.

Abdomen of “big” specimens with a spinopleural plate from mesothorax to

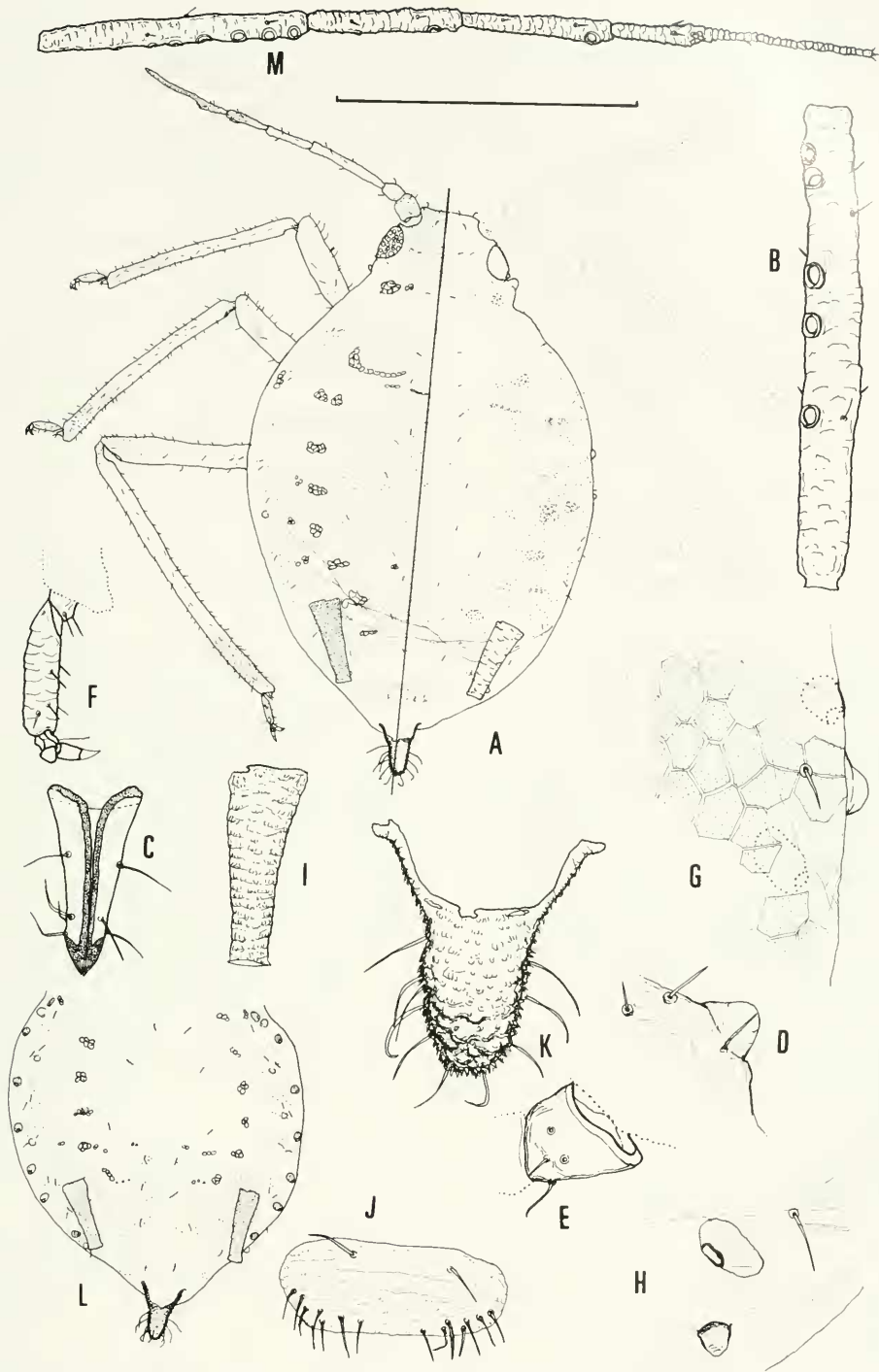


Fig. 2 *Aphis (A.) melosae*. A-K, Apterous viviparous female "big." L-M, Alate viviparous female. A, Habitus (on left with pigmentation, on right without pigmentation). B, Antennal segment III. C, Ultimate rostral segment. D, Prothoracic marginal papillae. E, Hind trochanter. F, Hind tarsus. G, Marginal part of abd. seg. I. H, Marginal part of abd. seg. VII. I, Siphunculus. J, Subgenital plate. K, Cauda. L, Abdomen. M, antennal flagellum. Scale bar = 1 mm (A, L), 0.40 mm (I, J, M), 0.27 mm (E), 0.25 mm (C, F), 0.20 mm (B, D, G, H, K). Illustrations by María Nieto González.

Table 2. Setae measurements of *Aphis (A.) melosae* apterous viviparous [ap. viv.] "big" and "dwarf" and alatae viviparous [al. viv.] females.

		ap. viv.		al. viv.
		"big"	"dwarf"	
ant.III	μm long	15-25	10-23	15-23
	D times	0.7-1.4	0.6-1.3	0.8-1.2
vertex	μm long	25-33	20-30	25-35
	D times	1.3-2.0	1.3-2.2	1.1-2.0
hind trocanter	μm long	30-43	25-40	27-37
	d times	0.5-0.8	0.6-0.9	0.5-0.7
hind femur: dorsal	μm long	25-40	15-25	20-28
	D times	1.1-2.0	1.0-2.0	1.1-1.5
abd.seg.III: spinal	μm long	22-33	17-30	20-33
	D times	1.1-2.0	1.1-2.0	1.1-1.9
marginal	μm long	25-38	17-30	22-33
	D times	1.1-2.2	1.1-2.2	1.2-2.0
abd.seg.VII: spinal	μm long	30-43	22-38	20-40
	D times	1.5-2.3	1.6-2.6	1.1-2.3
abd.seg.VIII	μm long	30-45	25-38	32-43
	D times	1.7-2.5	1.8-3.0	1.8-2.8

abd.seg.IV or V (from prothorax to abd.seg.VI in early spring) more or less coalescents with marginal sclerites (mostly independent) and frequently with intersegmental breaks; a transverse bar with different degree of development on posterior segments. Abdomen of "dwarf" specimens at most with marginal sclerites, a lobulated spino-pleural plate from mesothorax to abd.seg. IV (frequently fragmented) and a narrow transversal bar on posterior segments; but sometimes only several small marginal sclerites and a bar on abd.seg.VIII. Two (exceptionally 1, 3 or 4) setae on abd.seg.VIII and 2 marginal setae

at each side on presiphuncular abdominal segments.

Siphunculus more or less cylindrical or slowly cone-truncated, rough, in "big" specimens 0.20 to 0.33 mm long (2.32) 3.42 to 4.71 (5.46) longer its width at middle and 1.26 to 1.65 times the cauda, in "dwarf" specimens 0.09 to 0.20 mm long, (2.22) 2.60 to 4.00 (4.34) longer than its width and 0.95 to 1.18 (1.39) times the cauda. Subgenital plate with 2 anterior setae and 10-17 ("big") or 8-13 ("dwarf") posterior setae. Cauda broad fingerlike, in "big" specimens 0.15 to 0.21 mm long, 1.00 to 1.21 (1.38) times its basal width and

Table 3. Antennal segments measurements of *Aphis (A.) melosae* apterous viviparous [ap. viv.] "big" and "dwarf" and alatae viviparous [al. viv.] females.

	ap. viv. "big" 6 segmented	ap. viv. "dwarf"		al. viv. 6 segmented
		6 segmented	5 segmented	
ant.III (mm)	0.25-0.36	0.14-0.22	0.17-0.35	0.25-0.37
ant.IV (mm)	0.11-0.22	0.06-0.12		0.13-0.23
ant.V (mm)	0.14-0.18	0.06-0.14	0.07-0.13	0.13-0.21
ant.VIb (mm)	0.09-0.12	0.08-0.11	0.07-0.10	0.09-0.12
ant.VIpt (mm)	(0.18) 0.21-0.26	0.14-0.20	0.14-0.20	0.20-0.24
ant.III/ant.VI _{pt}	1.21-1.68	0.91-1.43	1.17-1.75	1.19-1.64
ant.VIpt/ant.VIb	(1.76) 2.00-2.35	(1.40) 1.70-2.00	1.87-2.18	1.82-2.33
u.r.s./ant.VIb	1.30-1.53	1.28-1.53	1.35-1.60	1.16-1.50

with 8 to 12 setae, and in "dwarf" specimens 0.08 to 0.14 mm long, 0.86 to 1.10 (1.25) times its basal width and with 6 to 10 setae.

Alate viviparous female (n = 63; 13 measured) (Fig. 2L, M).—Body 1.35 to 2.02 mm long. When alive, brown with head, thorax, antenna (2/10 basal part of ant.III, up to ½ basal part of ant.IV, and ant.V, dusky), legs (nearly all femur I, ½ base of femur III and ¾ base of tibiae pale to smoky), abdominal bars, siphunculus and cauda dark brown to black.

Abdomen with marginal presiphuncular and postsiphuncular sclerites, specially developed intersegmental sclerites abd.seg.IV–V, isolated sclerites or spinal bar on abd.seg.VI, a wide bar on ant.seg.VII, and 2 isolated sclerites or a bar on abd.seg.VIII. Setae similar to those of apterae (Table 2). Marginal papillae similar in size and shape to those of apterae; some specimens without one or both papillae on abd.seg.VII; 1 to 6 ones on abd.seg.II to abd.seg.IV.

Antenna 6 segmented, 0.90 to 1.28 mm long and 0.58 to 0.76 times BL; measurements of antennal segments in Table 3. Ant.III with 7 to 13 secondary sensoria (sensoria per antenna (26 antennae examined)—7–8: 54% antennae, 9–10: 31% and 11–13: 15%), ant.IV with 0 to 4 and ant.V very exceptionally with 1 or 2 (1 on one antenna of 2 specimens and one per antenna in one specimen). U.r.s. = 0.13 to 0.16 mm long, 1.87 to 3.00 its basal width and 1.12 to 1.33 times h.t.II.

Siphunculus 0.13 to 0.27 mm long, 3.25 to 5.40 its width in the middle and 1.19 to 1.43 times the cauda. Subgenital plate with 2 or 3 (exceptionally 4) anterior setae and 8 to 15 posterior ones. Cauda similar in shape to those apterae, 0.10 to 0.19 mm long, 0.91 to 1.34 times its basal width and with 8–11 (15) setae.

Type material.—Holotype: apterous viviparous female "big" (measured specimen number 2) collected on *Grindelia chiloensis* (Corn.) Cabrera at Malargüe (Mendoza province, Argentina, 35°00'S, 69°25'W,

1,400 m), 28-X-94, J. Ortego leg. in collection Universidad de León (Departamento de Biología Animal). Paratypes: 300 apterous and 63 alate viviparous females found (J. Ortego leg.) on the same host-plant at the same locality on 17-XI-93, 28-X-94, 6-XII-94, 25-XI-95, 28-III-96, deposited in the author's collections (Universidad de León and INTA Malargüe) and in The Natural History Museum, London and Muséum Nationale d'Histoire Naturelle, Paris.

Etymology.—The specific name is a noun in the genitive case derived from the common (Spanish) name of the aphid's host-plant: "melosa" (I.C.Z.N., article 11 (h) (i) (3), International Commission of Zoological Nomenclature 1985).

Biology and distribution.—*Aphis*(A.) *melosae* is monoecious on the Asteraceae *Grindelia* spp., mainly *G. chiloensis* (Cornel.) Cabrera but also on *G. tehuelches* (Speg.) Cabrera ("La Cruz Negra", Tupungato, Mendoza, Argentina, 21-XI-97, J. Ortego leg.) and perhaps on other related species of this genus. It forms dense colonies on the stems and the axil of leaves ("big" and "dwarf") and on the underside of the leaves ("dwarf") of its host plant.

The "big" specimens are present from early spring (at the end of September) to the end of spring, and also in autumn (specimens found on 19-IV-96). The "dwarf" specimens appear in November and they have been found until March or April. It is evident that the "dwarf" form is a summer dwarf form (Miyazaki 1987), as in other *Aphis* spp., for example *A. urticata* Gmelin, 1790 or *A. ruborum* (Börner, 1932) in Europe and *A. gossypii* Glover, 1877 around the World.

The alate viviparous females coexist with the "big" apterous females, but we have not found alatae with the "dwarf" ones. We have not found sexual forms. It is possible that the species is holocyclic, but it is more probable that it is anholocyclic because the characteristics of its host-plant during the winter permit aphids to live protected.

The new species is possibly distributed

in dry areas of the southern half of Argentina, because *Grindelia chilensis* is distributed on sandy or rocky dry areas of the central western part of Argentina and *G. tehueches* reaches south to Santa Cruz province.

Discussion.—*Aphis melosae* is a very good example of the variability in aphids. There are several important differences between the apterous viviparous females named by us as “big” and “dwarf”. These differences are so significant that it would be possible to think that two species are involved, but the coexistence of two kinds of apterous females in November, December and April and the characteristics of the alate females (Tables 2–3) allow us to affirm that only one species is involved.

Aphis melosae belongs to the “*craccivora*” or “*Pergandeida*” species group, characterised by the presence of a more or less developed thoracico-abdominal or abdominal discal plate. Although *A. craccivora* is polyphagous and other species of this group are oligophagous, the majority of species in this group are strict monophagous (species living only on one host-plant species) or non-strict monophagous (species living on few and related species).

Aphis (A.) *melosae* and *Aphis* (A.) sp. unpublished (Ortego 1998) are the only species of this group in South America living on Asteraceae (as well as *A. craccivora*). The apterous viviparous females of *Aphis* sp. are similar in size to the “big” specimens of *A.*(A.) *melosae*, but they do not have marginal papillae on abd.seg.II to VI. The “big” specimens can be differentiated from the apterous viviparous females of the other species of this group having marginal papillae on abd.seg.II to VI, *A.*(A.) *mulini* and *A.*(A.) *mulinicola*, for the following characters: (1) the ratio ant.VIpt/ant.VIb, more or less 1 in *mulinicola*, 1.5–1.8 in *mulini* and 1.7–2.4 in *melosae*; (2) the number of caudal hairs, 8–10 in *mulinicola*, 10–14 in *mulini* and 7–12 in *melosae*; and (3) the host-plant, *Mulinum* (Apiaceae) for *mulini* and *mulinicola* and *Grindelia* for *melosae*.

The “dwarf” apterous viviparous females of *A.*(A.) *melosae* can be differentiated from the other *Aphis* spp. of the nominal subgenus recorded in South America by the combination of its small size and the host-plant.

On the other hand, the metric characteristics of *A.*(A.) *melosae* and *A.*(A.) *marthae* Essig, 1953, which lives on *Quilaja saponaria* (Rosaceae) in Chile (Essig 1953, Remaudière 1994) are very close. *Aphis marthae* apterae and *A. melosae* “big” apterae are similar in size (BL). They can be differentiated by the general appearance; the front shape (deeply sinuate in *marthae*, and moderately sinuate in *melosae* “big”); the cauda shape (without constriction, nearly triangular in *marthae*, with constriction, fingerlike, in *melosae*); the marginal papillae on abd.seg.II–VI (papillae exceptionally present on *marthae* and exceptionally absent in *melosae* “big”); the secondary sensoria (always absent on *marthae* and commonly present in *melosae* “big”); the ratio u.r.s/h.t.II 0.91–1.16 in *marthae* and 1.11–1.32 in *melosae* “big”); and the ratio BL/rostrum (3.8–4.7 in *marthae* and 2.44–3.57 in *melosae* “big”). The alatae females of *A. marthae* have segmental bands on the abdomen and 11–21 secondary sensoria on ant.III; the alatae females of *A. melosae* have segmental bands only on abd.seg.VI–VIII and 7–13 secondary sensoria on ant.III.

ACKNOWLEDGMENTS

The authors express their gratitude to Prof. Georges Remaudière (Muséum National d'Histoire Naturelle, Paris, France) and Prof. Juan M. Nieto Nafría (Universidad de León, León, Spain) for providing useful comments on the manuscript. We also thank Dr. Manuel Marcos, Professor of Latin Philology at the University of León, for his help with the names of the taxa described.

This work was funded in part by grant LE20/99 from the Junta de Castilla y León, Educación y Cultura (Spain).

LITERATURE CITED

- Eastop, V. F. 1966. A taxonomic study of Australian Aphidoidea (Homoptera). *Australian Journal of Zoology* 14: 399–592.
- Essig, E. O. 1953. Some new and noteworthy Aphidae from Western and Southern South America. *Proceedings of the California Academy of Sciences (Fourth Series)* 28(3): 59–164.
- Ghosh, A. K. 1975. A list of aphids (Homoptera: Aphididae) from India and adjacent countries. *Journal of the Bombay Natural History Society* 71(2): 201–220.
- Ghosh, A. K. 1977. Additions to the list of aphids (Homoptera Aphididae) from India and adjacent countries. *Journal of the Bombay Natural History Society* 74(1): 29–44.
- Hille Ris Lambers, D. 1974. On American Aphids, with descriptions of a new genus and some new species (Homoptera, Aphididae). *Tijdschrift voor Entomologie* 117(4): 103–155.
- International Commission of Zoological Nomenclature 1985. *Code International of Zoological Nomenclature, Third edition*, International trust for Zoological Nomenclature, British Museum (Natural History) and University of California Press. London, Berkeley and Los Angeles, 338 pp.
- Millar, I. M. 1994. A catalogue of the aphids (Homoptera: Aphidoidea) of sub-Saharan Africa. *Agriculture Research Council (Plant Protection Research Institute Handbook 4)*, Pretoria, 130 pp.
- Miyazaki, M. 1989. Forms and morphs of aphids, pp. 27–50. *In* Minks, A.K. and P. Harrewijn. *World Crop Pests: Aphids, Their Biology, Natural Enemies and Control*, Vol. 2A. Elsevier, Amsterdam.
- Naumann-Etienne, K. and Remaudière, G. 1995. A commented preliminary checklist of the aphids (Homoptera: Aphididae) of Pakistan and their host plants. *Parasitica* 51(1): 1–61.
- Ortego, J. 1998. Pulgones de la Patagonia Argentina con la descripción de *Aphis intrusa* sp. n. (Homoptera: Aphididae). *Revista de la Facultad de Agronomía La Plata*, 102(1): 59–80.
- Ortego, J. and Mier Durante, M.P. 1997. Les espèces sud-américaines d'*Aphis* inféodées au genre *Berberis* (Hemiptera: Aphididae). *Annales de la Société Entomologique de France (N.S.)* 33(4): 411–418.
- Raychaudhuri, D. N., Ghosh, M. R. and Basu, R. C. 1980. Subfamily Aphidinae, pp. 47–278. *In* Raychaudhuri, D. N. *Aphids of North-east India and Bhutan*. The Zoological Society, Calcutta.
- Remaudière, G. 1994. Revue et clé des espèces sud-américaines d'Aphidina et description d'un *Aphis* nouveau [Homoptera, Aphididae]. *Revue Française d'Entomologie (N.S.)* 16(3): 109–119.
- Remaudière, G. and Remaudière, M. 1997. *Catalogue des Aphididae du Monde/Catalogue of the world's Aphididae*. Homoptera Aphidoidea. Institut National de la Recherche Agronomique, Paris, 475 pp.